

Sponges

There are three types of sponges

Glass sponges

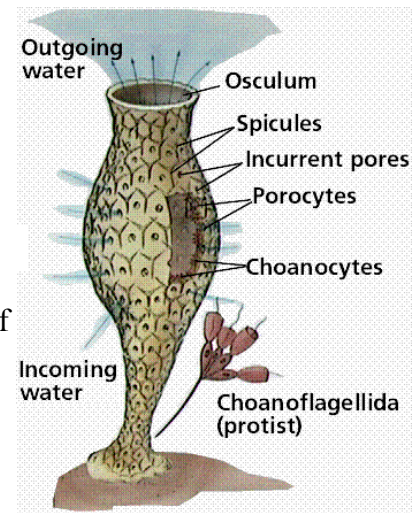
Rare, found in relatively deep waters (450-900 m), all oceans but mostly Antarctic. 4-12 inches in height, skeletons made of silica

Calcareous sponges

Marine, found in shallow, tropical waters. Small, less than 4 inches long. Skeleton spicules made of calcium carbonate

Demosponges

Most common types of sponges. (90%) Reproduce asexually and sexually. Spongin protein and silica make skeletons. Mostly marine, but some freshwater species.



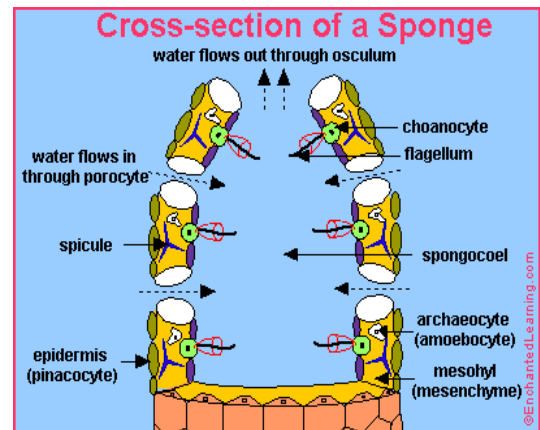
FUN FACT

Some sponges are carnivorous, and eat crustaceans

Sponges have specialized body plans

- Holdfast ("roots" the sponge to the rock)
- Epidermis (outer surface)
- Pores (water flows in)
- Osculum (water flows out)

Most sponges have two layers – the epidermis and the inner layer. They are separated by a gel layer called mesohyl (mesenchyme). There are supportive needles called spicules that help support the sponge. Sponges do not have tissues or organs, but do have different cells. Sponge shapes include tubes, fans, cups, cones, blobs, barrels, and crusts.



Cell types

Amoeba-like cells that swim through the mesohyl and secrete collagen, cells that secrete polycaccharides that form mesohyl, reproductive cells, cells that form the spicules of the skeletons, Choanocyte (collar cells) – line the inner cavity. Have flagellum and collects food (and sperm), epidermis cells, and some have muscle cells and cells that help prevent disease.

Food

Sponges eat plankton and filter the cells from the water. Their cells called choanocytes (collar cells) collect the food, and the amoebocytes take the food to other cells. All the remaining water flows out through the osculum.

Reproduction

Sponges are hermaphrodites – both male and female. They release sperm into the water. The sperm is collected by the collar cells, and the sperm fertilizes the eggs inside the sponge. After fertilization, millions of fertilized cells are released into the ocean.

Advantages over single-celled organisms

- Division of labor
- Cell Specialization

